Landscape and Urban Planning 189 (2019) 11–14

Contents lists available at ScienceDirect

Landscape and Urban Planning

journal homepage: www.elsevier.com/locate/landurbplan

Research Note

The role of landscape installations in climate change communication

Carolina Aragón*, Jane Buxton, Elisabeth Hamin Infield

University of Massachusetts Amherst, United States

ARTICLE INFO

Keywords:
Climate change communication
Landscape installations
Public art
Public engagement

ABSTRACT

Engaging the public in the issue of climate change is critical in fostering the support required for climate change adaptation. Designers and artists can contribute to public engagement using the landscape as a setting and medium to visualize climate change futures. This research note presents the case example of *High Tide*, a temporary landscape installation in Boston, MA, designed to bring attention to projected flooding in the area due to sea level rise. Our study sought to pilot the use of social science methods to gain initial insight on whether a landscape installation, through its accessible and site-specific qualities, could engage local audiences in the subject of climate change. Our findings provide an initial proof-of-concept for the role of public art in contributing to public engagement by bringing attention to and visualizing local effects of climate change using the landscape as a publicly accessible setting. Future research using robust social science methods would further illuminate these issues.

1. Introduction

Public support is critical to fostering the political and social acceptance of climate adaptation policies required to address the growing effects of climate change (Drews & van den Bergh, 2016). However, in countries like the U.S., public perception of climate impacts (believed to be geographically and temporally distant), and lack of communication and engagement at the community level, negatively affect public support for climate planning (Leiserowitz, 2005; Moser & Pike, 2015). Communication, as an initial form of engagement, is essential to generating interest, providing information, and promoting the exchange of ideas and knowledge about climate change (Moser & Pike, 2015). Challenges to communication around climate change include the abstract and remote nature of the information, the scientific nature of the message, and the alienating qualities of repetitive and negative messaging (Boulton, 2016; Scannell & Gifford, 2013). Creative practices in the arts and the humanities can overcome some of the challenges by providing new forms of representation and emotive experiences to an expanded public (Lippard, 2007; Yussof & Gabrys, 2011). Furthermore, landscape architects, planners, and artists can contribute to public engagement by grounding climate change communication in local landscape and place-based experiences (Sheppard, 2012, 2015; Olson, 2016).

Landscapes provide visual, common experiences, that can link environmental phenomena to people's daily life (Nassauer, 2012). As such, they are an ideal setting in which to make climate change communication more meaningful (Sheppard, 2015). Current theory points to the use of *landscape messaging*, using the landscape to reveal signs of climate change, and the use of visual representation tools to increase awareness and action at the community level (Sheppard, 2015). Presently, visual representation of climate change-induced futures have focused on virtual 3D simulation environments and digital visualization tools (Dulic, Angel, & Sheppard, 2016; Sheppard, 2015). These representations are detached from the embodied experience of the landscape and are available only to limited audiences. Our research seeks to better understand how landscape installations may offer an alternative form of landscape-based representation of climate change futures—one that engages public art practices to publicly, and site-specifically, visualize future conditions.

1.1. Landscape installations & public art projects addressing climate change

Designed to elicit a reaction by heightening the viewer's senses, public art installations can create experiences that are physically, emotionally, and intellectually accessible to diverse audiences (Bonnemaison & Eisenbach, 2009; Hein, 1996). Like site-specific public art, landscape installations are deeply connected to the physical qualities of a site, providing a direct response to, and interpretation of a place (Kwon, 2004). As such, they are capable of engaging with the ephemeral elements of the landscape, revealing dynamic site

* Corresponding author at: Landscape Architecture and Regional Planning, 210 Design Building, University of Massachusetts, 551 North Pleasant Street, Amherst, MA 01003-2901, United States.
E-mail addresses: caragon@larp.umass.edu (C. Aragón), jbuxton@larp.umass.edu (J. Buxton), emhamin@umass.edu (E. Hamin Infield).

https://doi.org/10.1016/j.landurbplan.2019.03.014
Received 4 August 2018; Accepted 31 March 2019
0169-2046/ © 2019 Elsevier B.V. All rights reserved.

relationships, and making ecological and urbanization processes legible (Rovira, 2016).

In creating temporary environments that visualize climate change futures, landscape installations join the broad body of climate change artwork focused on *representation* as a translation of scientific knowledge (Giannachi, 2012; Duxbury, 2010). Recent artworks visualizing climate futures have focused on flooding due to sea level rise. *The Rising Tide* by Jason DeCaires Taylor (2015), was a temporary sculpture that visualized daily tidal patterns in London's Thames River. The sculpture—consisting of four male figures on horseback with oil-pumps for heads—was submerged twice a day, bringing attention to altered tidal patterns caused by sea level rise (Olson, 2016; Taylor, 2015). Chris Bodle's The Watermarks Project (2009) in Bristol, England, used light projection on buildings to represent projected flood levels. Eve Mosher's *HighWaterLine* (2007–ongoing) engaged local communities in marking predicted flooding. Chalk was used to mark the location, while illuminated markers represented flood depths (Mosher, 2007). Similarly, Catherine D'Ignazio and Andi Sutton's *Boston Coastline: Future Past* (2015), involved the public in a "'walking data visualization"' following Boston's future coastline.

These projects point to an initial set of opportunities for public art to engage the landscape in communicating about climate change:

1. *Using landscape processes to reveal climate change*: the artwork acts as a datum by which to measure or visualize change by engaging active landscape processes, such as Taylor's sculptures measuring tidal change.
2. *In situ visualization of climate change futures*: using the landscape as the setting to locally *represent* a future condition caused by climate change, such as marking the extent or depth of flooding due to sea level rise. As a visualization of a future condition, it may not engage current landscape processes.
3. *Community participation in visualization*: participatory and/or performance strategies rooted in the landscape (marking, walking, etc.) foster public engagement and the co-creation of the artwork.

2. Purpose and objectives

We were interested in piloting the use of social science research methods to assess how a landscape installation, as an in-situ visualization of climate change future, may engage audiences with climate change, and future flooding due to sea level rise in particular. The study did not seek to question the fundamental value of art or evaluate the artwork itself, but rather sought to better understand whether social science methods could be useful in gaining insight into the role of landscape installations in engaging the local community around issues of climate change. We used the case example of *High Tide* (Fig. 1), designed by one of the authors, to empirically investigate the interaction of the public with the installation and gain initial insight into whether the artwork encouraged engagement with local effects of climate change. Specifically, our objectives were to:

A. Determine whether the artwork was effective in calling attention to the subject of flooding due to sea level rise.
B. Determine whether the artwork increased knowledge or incited a change of opinion regarding climate change.
C. Explore the viability of using social science research methods to gain further insight on the role of landscape installations in communicating about climate change.

3. Materials and methods

3.1. Materials: High Tide installation

High Tide was a temporary landscape installation exhibited on the Rose Kennedy Greenway in Boston, MA from May to November of 2016. As an abstract representation of a flooded marsh it brought attention to Boston's shifting tidal landscape, including future flooding due to sea level rise. Located on a highly trafficked sloped site, sitting at the edge of a potential flood zone due to rising sea levels, *High Tide* engaged the site's topography to visualize potential inundation (Fig. 2).

High Tide was comprised of fiberglass rods representing marshland grasses, and dichroic acrylic circles creating the illusion of water. The circles, which rotated following the dominant wind direction, created a visually dynamic composition of colorful shadows and reflections. Signage for the artwork—located at intersection of the major pedestrian and vehicular routes—read:

High Tide is an abstracted marsh landscape that seeks to bring attention to the shifting boundary between land and water along Boston's shoreline. Inspired by a marsh during high tide, when the grasses are flooded by water, the installation speaks of the city's changing shoreline. This shifting boundary occurs at multiple scales: through daily tidal fluctuations, historic man-made land reclamation, and potential future flooding due to sea level rise.

3.2. Methods

In order to explore the landscape installation's capacity to engage the public with the associated climate change messaging, the study used multiple social-science methods. Participant observation, stakeholder interviews, and surveys allowed the study to reach multiple audiences, explore different forms of engagement (physical and intellectual), and narrow the focus of the study. This triangulation provided greater confidence in the findings (Yin, 2013).

Participant observations occured two months after *High Tide* was initially displayed. Interactions with the installation were recorded during ten sessions, each of one-hour long duration. The following month, four community stakeholders were interviewed to identify their daily experiences with the installation ("the focus group"). Two months later, toward the end of the exhibit, an online survey was developed based on responses from the observations and stakeholders interviews. The survey included multiple choice questions, including the option of "other" for participants to voice their opinions. Choosing multiple answers was allowed.

4. Results

A total of 4309 pedestrians were observed walking past the exhibit during the ten hours of observations. Of the 4309 pedestrians observed walking past the installation, 6% (271 pedestrians) were recorded taking note of the installation. The installation incited a wide variety of reactions from the public including looking, touching, playing, and photographing. Outside the period of observation, minor vandalism in the form of removal of rods, occurred. During the period of observation, 37% of viewers stopped to read the sign.

The focus group and online survey questions and responses follow in Table 1.

5. Discussion

The results of the study suggested that the visual quality of the installation was most effective in initially attracting viewers and generating interest, while the climate change messaging resonated subsequently. While some viewers remained relatively immune to the climate message, others indicated that the site-specific nature of the installation helped them understand the local implications of flooding due to sea level rise in their neighborhood. When asked whether the artwork made them think differently about Boston's shoreline, the most frequent responses conveyed an understanding of how vulnerable the area may be to flooding, and how current municipal plans do not accommodate climate change issues.

These pilot test results suggest an initial proof-of-concept that

Fig. 1. Carolina Aragon (2016) *High Tide* [installation]. Boston: Rose F. Kennedy Greenway. © 2016 Carolina Aragon. Photo: © 2016 Matt Conti.

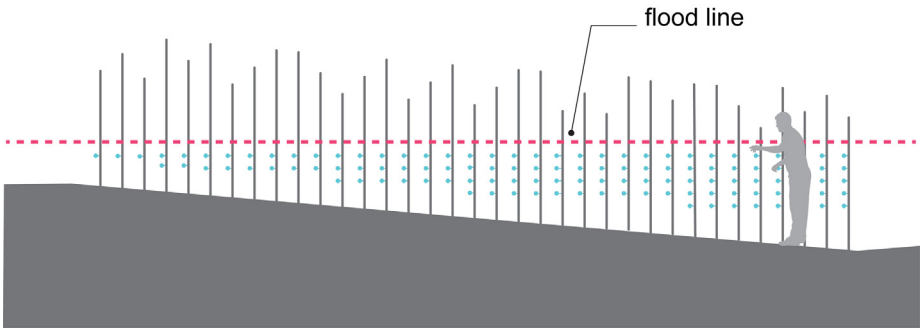

Fig. 2. Section drawing of *High Tide* showing site topography against future flood level. © 2016 Carolina Aragon.

supports the potential for landscape installations to contribute to public engagement by bringing attention to and visualizing local effects of climate change using the landscape as a publicly accessible setting. However, important limitations to their ability to communicate and engage may arise from each individual artworks' capacity to attract attention and the ability of the public to interpret the message—usually relying on written language on a sign. Furthermore, the accuracy of the representation may suffer from the inherent complexity of climate change science as well as the artistic interpretation of the information.

Further studies would benefit from the use of a larger and more diverse sample population to support the study insights, as well as cross-case comparison. In addition, assessing the impact of an installation on public engagement could benefit from comparing "before" and "after" conditions, and longer-term studies assessing whether the artwork eventually encouraged increased engagement in local planning efforts. Additional exploration on the value of in-situ landscape representation of climate change futures, and the role of public art in localizing knowledge and action surrounding climate change should be explored through more robust social science methods.

6. Conclusions

Communicating about climate change is challenging but essential in developing public support for policy action. This study brings attention to a potential new field of inquiry, the role of public art to engage the landscape in communicating about climate change. Specifically, this pilot study presents an initial proof-of-concept that landscape installations can contribute to public engagement with flooding associated with climate change. Through public and site-specific representations of future conditions, landscape installations may offer an accessible and attractive form to visualize the effects of climate change in local communities. By contributing to the public's understanding of the coming local impacts of climate change, landscape installations have the potential to encourage local action and participation. Our pilot study points to the potential of using social science methods to better understand the role of public art in engaging audiences around climate change, and calls for the use of larger and more robust studies to further develop knowledge on this largely unexplored topic.

Table 1
Sample questions and responses from focus group and online survey.

Focus group and online survey questions	Focus group sample responses (N = 4)	Online survey multiple choice answers (N = 45)	Online survey response %
When you first saw the installation, what was the first thing you noticed?	The light How the light changed during the day The installation is on a slope	*The reflective, colorful nature of the light* *The occupied space, there was "something" on the otherwise empty lawn*	59 34
Did you read the sign?	I didn't read the sign for a while, but when I did it was very helpful and provocative I think the sign has been effective, I see people walking by reading it	*Yes* *No*	76 24
What prompted you to read the sign?	Sign came in later I read the press release about it.	*Curious about the artwork* *Wanted to learn more about the meaning of the artwork*	63 56
What did you think or feel after you read the sign?	It's a new way to think about the city Neighborhood residents happy to see (the space) used for art It worked very well in that space	*It reminded you of seeing other markers in the city or old maps that indicate where previous shorelines existed* *It introduced the concept that this area was closer to the water, and could be flooded due to climate change* *You were surprised that such an old looking neighborhood like the North End sits on reclaimed land and could flood in the future* *You did not have a reaction*	39 29 23 19
Does the installation change or add to your views about climate change?	You pass it every day, reinforces it over and over A lot of climate change efforts are so big and difficult, (they) just kind of move to the background, but this is front and center Reinforces the concept of living with water	*It did not add or change your views* *Reinforces the concept of living with water* *Makes you question current City policies regarding climate change* *Kept the topic in your mind or consciousness longer than other presentations or projects*	40 34 23 20
Does this piece make you think differently about Boston's shoreline? About your neighborhood?	Neighborhood perspective We were reviewing the municipal harbor plans, for the build-up in the area. I didn't see any accommodations for climate change in that. That has certainly changed how I see new planning	*It makes you realize how much more vulnerable the area will be to flooding* *It makes you view future municipal harbor plans with a critical eye because of their lack of accommodation to climate change issues*	60 54

References

Aragon,C., (2016). *High Tide* [Landscape installation]. Boston, MA.

Bodle, C. (2009). *The Watermarks Project [Light installation].* England: Bristol Retrieved from: http://aprb.co.uk/projects/all-projects/2009/watermarks.

Bonnemaison, S., & Eisenbach, R. (2009). *Installations by Architects: Experiments in Building and Design.* New York: Princeton Architectural Press.

Boulton, E. (2016). Climate change as a 'hyperobject': A critical review of Timothy Morton's reframing narrative. *Wiley Interdisciplinary Reviews: Climate Change, 7*(5), 772–785. https://doi.org/10.1002/wcc.410.

D'Ignazio, C. (2015). *Boston coastline: Future Past* [Civic Art]. Boston, MA. Retrieved from: http://www.kanarinka.com/project/boston-coastline-future-past/.

Drews, S., & van den Bergh, J. C. J. M. (2016). What explains public support for climate policies? A review of empirical and experimental studies. *Climate Policy, 16*(7), 855–876. https://doi.org/10.1080/14693062.2015.1058240.

Dulic, A., Angel, J., & Sheppard, S. (2016). Designing futures: Inquiry in climate change communication. *Futures, 81*, 54–67. https://doi.org/10.1016/j.futures.2016.01.004.

Duxbury, L. (2010). A change in the climate: New interpretations and perceptions of climate change through artistic interventions and representations. *Weather, Climate, and Society, 2*(4), 294–299. https://doi.org/10.1175/2010WCAS1053.1.

Giannachi, G. (2012). Representing, performing and mitigating climate change in contemporary art practice. *Leonardo, 45*(2), 124–131. https://doi.org/10.1162/LEON_a_00278.

Hein, H. (1996). What is public art?: Time, place, and meaning. *The Journal of Aesthetics and Art Criticism, 54*(1), 1–7. https://doi.org/10.2307/431675.

Kwon, M. (2004). *One place after another: Site-specific art and locational identity.* Cambridge, MA: MIT Press.

Leiserowitz, A. A. (2005). American risk perceptions: Is climate change dangerous? *Risk Analysis, 25*, 1433–1442. https://doi.org/10.1111/j.1540-6261.2005.00690.x.

Lippard, L. (Ed.). (2007). *Weather report: Art and climate change.* Boulder, CO: Boulder Museum of Contemporary Art.

Moser, S. C., & Pike, C. (2015). Community engagement on adaptation: Meeting a growing capacity need. *Urban Climate, 14*, 111–115. https://doi.org/10.1016/j.uclim.2015.06.006.

Mosher, E. (2007). *HighWaterLine* [Chalk, illuminated beacons]. New York, NY. Retrieved from: http://highwaterline.org/new-york-city/.

Nassauer, J. I. (2012). Landscape as medium and method for synthesis in urban ecological design. *Landscape and Urban Planning, 106*, 221–229.

Olson, K. (2016). Climate storytelling art that helps us make sense of climate change. *Public Art Review, 27*(2), 40–49.

Rovira, R. (2016). Varying degrees of impermanence: Art and landscape as provocation. In J. Anderson, & R. Ortega (Eds.). *Innovations in landscape architecture* (pp. 223–235). New York: Routledge.

Scannell, L., & Gifford, R. (2013). Personally relevant climate change: The role of place attachment and local versus global message framing in engagement. *Environment and Behavior, 45*(1), 60–85. https://doi.org/10.1177/0013916511421196.

Sheppard, S. R. J. (2012). *Visualizing climate change: A guide to visual communication of climate change and developing local solutions.* New York: Routledge.

Sheppard, S. R. J. (2015). Making climate change visible: A critical role for landscape professionals. *Landscape and Urban Planning, 142*, 95–105. https://doi.org/10.1016/j.landurbplan.2015.07.006.

Taylor, J.D. (2015). *The Rising Tide* [Bronze sculpture]. London, England. Retrieved from: http://www.underwatersculpture.com/.

Yin, R. K. (2013). *Case study research: Design and methods.* Los Angeles, CA: Sage Publications.

Yussof, K., & Gabrys, J. (2011). Climate change and the imagination. *WIREs Climate Change, 2*, 516–534. https://doi.org/10.1002/wcc.117.